

No. 666,427.

Patented Jan. 22, 1901.

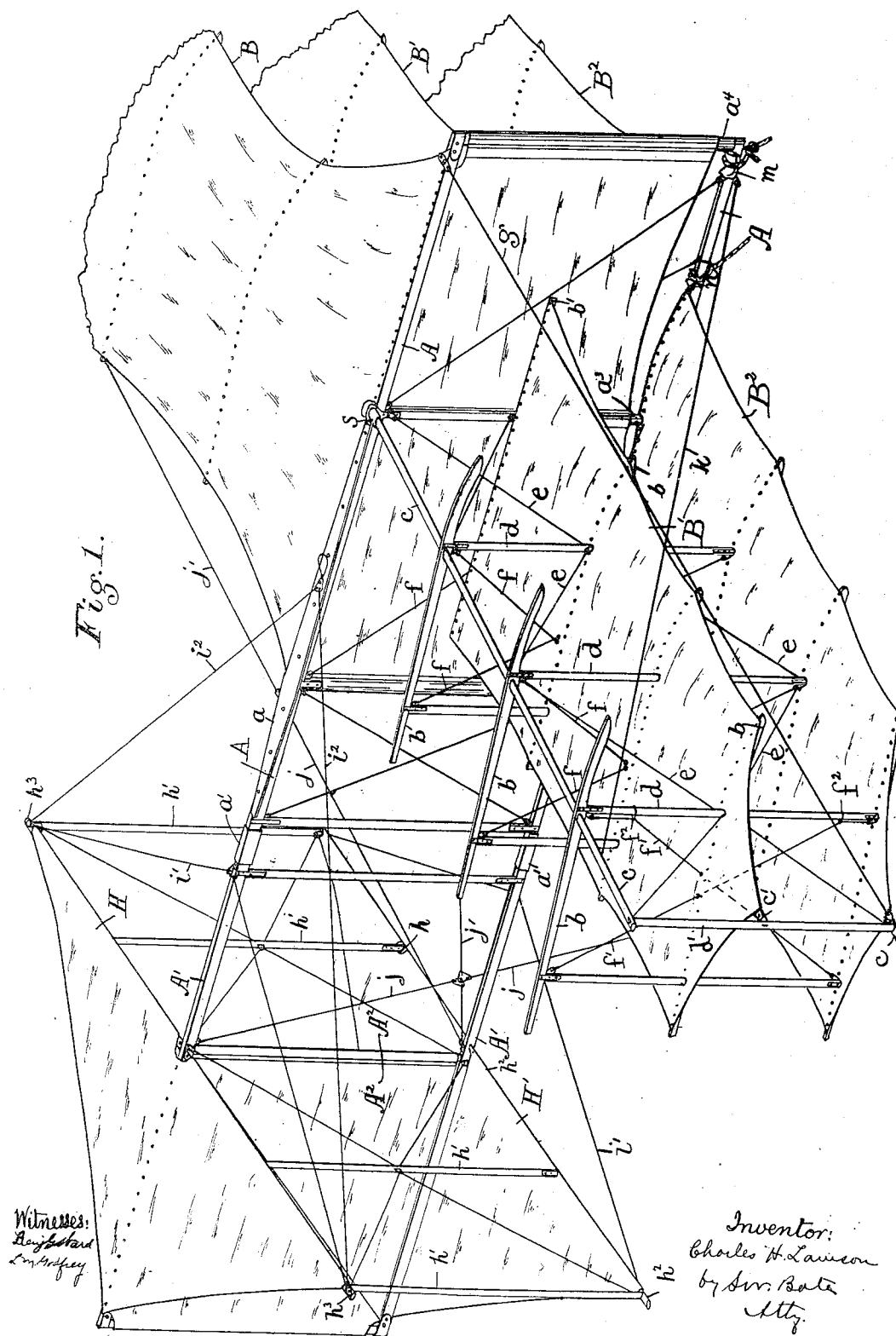
C. H. LAMSON.

KITE.

(No Model.)

(Application filed May 9, 1900.)

3 Sheets—Sheet 1.



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Fig. 2.

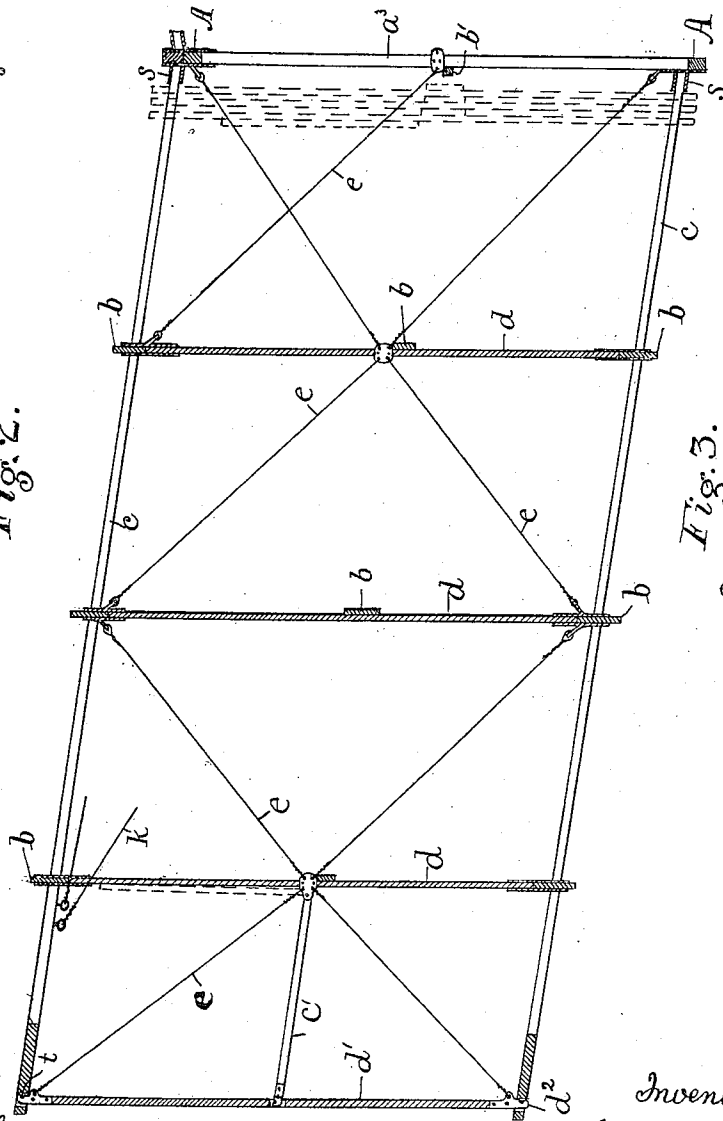


Fig. 3.



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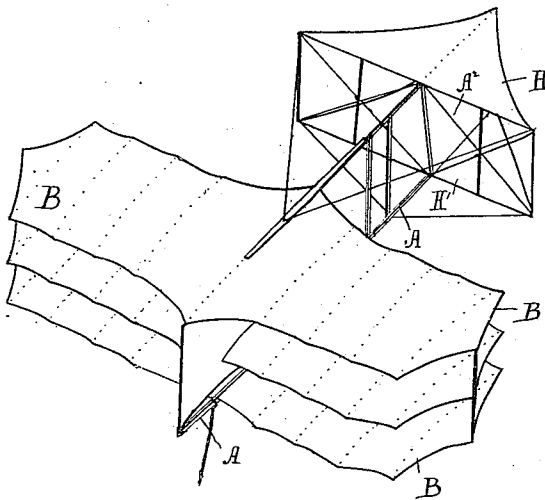
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3 Sheets—Sheet 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES H. LAMSON, OF PORTLAND, MAINE.

KITE.

SPECIFICATION forming part of Letters Patent No. 666,427, dated January 22, 1901.

Application filed May 9, 1900. Serial No. 16,003. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. LAMSON, a citizen of the United States of America, and a resident of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Kites, of which the following is a specification.

My invention relates to what are known as "ribbed aerocurve kites;" and it is particularly designed for use in carrying aloft meteorological instruments for making observations in the upper atmosphere and for other like purposes. These kites have curved wings or planes which in flight are kept in a position slightly inclined to the horizontal by a tail or rudder, which may be in the rear or both front and rear, the proper conformation of the wings being rigidly maintained by curved ribs suitably spread.

One object of the present invention is to construct a kite of this class so that it may be closely packed for shipment or handling, and also so that the inclination of the wings may be readily adjusted and balanced one against the other.

A further object is to prevent the kite from diving or turning over on its side or flying at an angle with the direction of the wind in case it is out of balance or for any other reason.

These objects I attain by means of the features hereinafter shown and described.

I illustrate my invention by means of the accompanying drawings, in which—

Figure 1 is a perspective view of my kite with the covering and wire edges removed from the upper wing on one side. Fig. 2 is a vertical section taken through one wing from the tip to the base. Fig. 3 is a perspective view of a modification of one of the details, and Fig. 4 is a perspective view showing the general appearance of the kite.

As shown, the kite is composed of an elongated frame A, forming the keel or center, with one or more wings composed, preferably, of curved surfaces extending out at each side in a generally horizontal position, and a tail or rudder at the rear end of the frame. The frame A, as shown, is in the form of truss having upper and lower chords with uprights, as a^3 and a^4 , and diagonal tie-wires. Near the forward end on the lower chord are two saddles m and n , to which holding-chords

may be attached, the forward one being used for handling the kite when the kite is near the ground and the rear one is for the main or lifting line and when it is fully up. The wings, as shown, are composed of three superposed curved planes B, B', and B² on each side of the central frame supported on arms c , which may be straight, as here shown, or slightly curved, if desired, one of said arms extending out from the upper chord, the inner ends of the arms fitting into sockets s , from which they are readily removable. The inner ends of the arms may be secured to the central framework by other means than those here shown or by hinges, as shown in Fig. 3. The wings or planes are formed of ribs b , having a covering of cotton cloth or other suitable fabric tacked to their upper edges. The covering is applied with wires inclosed in the edges in the well-known manner. The upper and lower sets of ribs, as shown, have openings through which pass the arms c , which are in the form of flattened oval bars, and the ribs are adapted to slide on these bars. The intermediate sets of ribs are attached to vertical posts d , which are fastened to the upper and lower ribs, forming, with the diagonal tie-wires f , a series of panels adapted to be folded in against the sides of the frame by sliding on the bars c . Diagonal tie-wires e brace the series of panels in the direction of the arm c , and the outer ends of the arms are connected by an upright d' , which is made detachable, so that the arm c may be drawn out separately and disconnected from the kite for convenience in packing.

As shown in Fig. 3, the inner end of the arm c is hinged to a projection c^5 , which extends out from the chord and which is long enough to receive all of the panels when they are folded against the frame. The hinge connection of the arm being thus outside of the folded panels, the arm may be folded in against the frame without being removed.

In order to detachably connect the upright d' , it is provided at each end with a fastening-plate d^2 , with a lateral recess fitting over a pin t , which passes through the arm c . The arm c has a slot large enough to receive the plate d^2 and to allow the notch t to pass over the pin. The upright d' is connected with the folding panels by diagonal tie-wires e , so that

it folds in with the panels when the arms are removed.

To furnish a support for the tip of the central wing, I provide a short arm c' , which is hinged by its inner end to the nearest upright d , the outer end being provided with a notched plate fitting into a slot in the upright d' and engaging a pin which passes transversely through said slot. The upright is disconnected from the arms c by pulling it slightly out against the pull of the diagonal braces and disengaging the plates d^2 from the pins t .

As here shown, the coverings, which form the wings proper, are glued and tacked or otherwise secured to the upper surfaces of the ribs, and the points of the wings are stretched and hooked onto suitable fastenings provided near the ends of the arms c and c' . If desired, the covering may be applied to the lower surfaces of the ribs or to the upper and lower, or both. The inner ends of the wings are tacked to central ribs or ledges b' , secured along the frame A.

As here shown, the ribs, which give form to the wings, are approximately straight from the arm c to their rear ends, and forward of the arm they curve downward, so that the wing has a greater curvature at its front edge than at its rear, the outer ribs being less curved than the inner ones. For the purpose of giving the kite lateral stability the outer tips of the wings are shown as somewhat above the level of the inner ends, so that the wings have an upward inclination from the center outward.

For the purpose of giving the kite additional lateral stability when in the air and for preventing it from diving if accidentally canted on its side, also to obtain an advantageous point of attachment for the flying line as well as for the bracing-guys, I cause the forward end of the central frame, or what might be called the "bowsprit," to project forward beyond the forward edges of the wings. This bowsprit also affords a framework for a keel or vertical support at the front, so that if the kite turns on its side the wind gets under the projecting portion of the frame and tends to support and right it. The frame A is provided with a proper covering extending from the bowsprit as far back as the rear edges of the wings, the kite being thus steadied and dangerous side movements checked. The horizontal covering at the top is also shown carried out to the point of the bowsprit as a front rudder and additional support.

In order to properly balance the wings on each side, I provide means for tilting or inclining the outer ends to a greater or less extent. A general adjustment is made by guys k , each of which is secured at the front lower corner of the frame A and at the under side of the upper arm c by screw-eyes, as shown in Fig. 2, or by other suitable means. By adjusting the position of these screw-eyes a general adjustment of the wings on each side may be made. A more delicate adjustment

is obtained by the means here shown for changing the vertical inclination of the ribs in the outer panels of the wings. This is accomplished by loosening one of the diagonal tie-wires of the panel and tightening the other. The simple means here shown for accomplishing this result are two loops f^2 , adapted to slide on the uprights d , each of the two diagonal tie-wires passing through one of these loops. By sliding both of these loops up or down the inclination of the ribs to the horizontal is adjusted with great precision.

For the purpose of holding the kite at the proper inclination to the wind I provide a tail or rudder, here shown as consisting of two triangular planes H and H', extending out at each side of the central frame, and a vertical plane Δ^2 , formed by covering the space within the rear portion of the central frame. The fabric of the planes H and H' is secured along the central frame and to outward-extending arms h^2 and h^3 , which are hinged to the central frame, so that they fold back against it for convenience in packing. Uprights h' are provided, connecting the pivoted arms h^2 and h^3 the upper with the lower, and wire braces i' stay the outer ends of the arms h^2 and h^3 . The tail is detachably connected to the main kite by means of ferrules a' , applied to the upper and lower chords of the central frame, and it is otherwise secured by wire braces i^2 , j , and j' . For the purpose of rendering the chords stiff laterally I secure to them flat stringers a at approximately the middle point.

It will be understood that as many superposed wings as desired may be used on each side of the center, although I prefer to make a kite with three pairs of wings, as here shown.

It will be understood that while this construction is primarily designed for a kite to be used for carrying meteorological instruments for raising signals or advertising devices or other like purposes it is also capable of use as a flying-machine by the application of suitable propelling and guiding mechanism.

The feature here shown of the ribs so mounted on the transverse arm as to slide together for the purpose of packing, &c., may be utilized in other forms of kite.

I claim—

1. The herein-described kite having one or more transverse arms, ribs adapted to slide on said arms, a covering for said ribs and means for holding the ribs extended on said arms and the covering stretched on said ribs.
2. The herein-described kite having a central frame, arms extending horizontally out from each side of the frame, ribs adapted to slide on said arms and to fold against said frame, a covering for said ribs and means for holding said ribs extended on said arms and said covering stretched on said ribs.
3. The herein-described kite having a central frame, arms extending horizontally out

from said frame on each side, one at the top and one at the bottom of the frame, ribs adapted to slide on said arms, corresponding ribs on the upper and lower arms being connected by a framework to form panels adapted to fold against said central frame, a covering for said ribs and means for holding said panels extended on said arms and said covering stretched on said ribs.

4. The herein-described kite having a central frame, arms extending horizontally out from said frame on each side, one at the top and one at the bottom of said frame, ribs adapted to slide on said arms, vertical posts connecting corresponding ribs on the upper and lower arms and wires forming with said ribs and posts panels adapted to fold against the said central frame, ribs secured to said panel between the top and bottom members, coverings for said ribs and means for holding said panels extended on said arms and said covering stretched on the ribs.

5. The herein-described kite having a central frame, wings projecting out from each side of said frame and means for tilting the tips of said wings with relation to the body of the wing.

6. The herein-described kite having a central vertical frame, wings projecting out at each side of said frame composed of arms attached to the frame, a series of upright panels connected with said arms having vertical members composed of posts connecting said ribs and diagonal tie-wires and loops through which the wires pass adapted to slide on said vertical members to regulate the inclination of said ribs and the inclination of the wing.

Signed at Portland, Maine, this 3d day of May, 1900.

CHARLES H. LAMSON.

Witnesses:

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